

BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA

DOCKET NOS. 2019-224-E and 2019-225-E – ORDER NO. 2022-332

MAY 5, 2022

IN RE:

South Carolina Energy Freedom Act)	ORDER APPROVING MODIFIED
(House Bill 3659) Proceeding Related to)	INTEGRATED RESOURCE
S.C. Code Ann. Section 58-37-40 and)	PLANS WITH CHANGES
Integrated Resource Plans for Duke)	
Energy Carolinas, LLC)	
)	
And)	
)	
South Carolina Energy Freedom Act)	
(House Bill 3659) Proceeding Related to)	
S.C. Code Ann. Section 58-37-40 and)	
Integrated Resource Plans for Duke)	
Energy Progress, LLC)	

The above-captioned matters come before the Public Service Commission of South Carolina (Commission) concerning the petition for acceptance and approval of the Modified 2020 Integrated Resource Plans (Modified 2020 IRPs) by Duke Energy Carolinas, LLC and Duke Energy Progress, LLC (collectively, Duke Companies or Companies). The Commission accepts the Companies' Modified 2020 IRPs and specifically mandates the Duke Companies to use Portfolio A2 as the selected base plan for the Companies' respective Modified 2020 IRPs.

I. BACKGROUND ON INTEGRATED RESOURCE PLANNING

An Integrated Resource Plan (IRP) is an electrical utility's

plan which contains the demand and energy forecast for at

least a fifteen-year period, contains the supplier's or producer's program for meeting the requirements shown in its forecast in an economic and reliable manner, including both demand-side and supply-side options, with a brief description and summary cost-benefit analysis, if available, of each option which was considered, including those not selected, sets forth the supplier's or producer's assumptions and conclusions with respect to the effect of the plan on the cost and reliability of energy service, and describes the external environmental and economic consequences of the plan to the extent practicable.¹

If the Commission finds that the IRP initially presented does not satisfy the statutory requirements of Act 62, then the Commission may require additional modification to the IRP. Pursuant to S.C. Code section 58-37-40(C)(3), the Companies “within sixty days after the date of the final order, shall submit a revised plan addressing concerns identified by the commission and incorporating commission-mandated revisions to the integrated resource plan to the commission for approval.”

Once the Modified 2020 IRP has been filed, the Office of Regulatory Staff (ORS) “shall review the electrical utility's revised plan and submit a report to the commission assessing the sufficiency of the revised filing.”² Other parties to the integrated resource plan proceeding may also submit comments. “No later than sixty days after the Office of Regulatory Staff report is filed with the commission, the commission at its discretion may determine whether to accept the revised integrated resource plan or to mandate further remedies that the commission deems appropriate.”³

¹ S.C. Code Ann. § 58-37-10(2) (2015).

² S.C. Code Ann. §58-37-40(C)(3) (Supp. 2022).

³ *Id.*

II. NOTICE AND INTERVENTION

Petitions to Intervene were received from the South Carolina Coastal Conservation League (CCL), Southern Alliance for Clean Energy (SACE), Sierra Club, Upstate Forever, and Natural Resources Defense Council (NRDC) (collectively, CCL et al.); the Carolinas Clean Energy Business Association (CCEBA); Johnson Development Associates, Inc. (JDA); Cherokee County Cogeneration Partners, LLC; Vote Solar; and Nucor Steel – South Carolina. The Petitions to Intervene of CCL et al., Cherokee County Cogeneration Partners, JDA, Vote Solar, Nucor Steel, and SCDCA were not opposed by Duke, and no other parties sought to intervene in this proceeding. CCL et al., CCEBA, JDA, and Vote Solar also intervened in Docket No. 2019-225-E. The South Carolina Office of Regulatory Staff (ORS) is automatically a party to both Dockets pursuant to S.C. Code Ann. § 58-4-10(B) (2015).

III. APPLICABLE LAW

A. The Duke Companies' 2020 Modified IRPs

The requirements of Modified IRPs pursuant to S.C. Code Ann. Section 58-37-40(C)(3) are the same as the requirements specified by S.C. Code Ann. § 58-37-40(B)(1), with the additional consideration of the specific additional changes, modifications, or alterations required by the Commission in its Order on the initial IRPs in Order No. 2021-144.

S.C. Code Ann. § 58-37-40(B)(1) states that utility IRPs *must* include the following elements:

- (a) A long-term forecast of the utility's sales and peak demand under various reasonable scenarios;

- (b) The type of generation technology proposed for a generation facility contained in the plan and the proposed capacity of the generation facility, including fuel cost sensitivities under various reasonable scenarios;
- (c) Projected energy purchased or produced by the utility from a renewable energy resource;
- (d) A summary of the electrical transmission investments planned by the utility;
- (e) Several resource portfolios developed with the purpose of fairly evaluating the range of demand-side, supply-side, storage, and other technologies and services available to meet the utility's service obligations. Such portfolios and evaluations must include an evaluation of low, medium, and high cases for the adoption of renewable energy and cogeneration, energy efficiency, and demand response measures, including consideration of:
 - i. customer energy efficiency and demand response programs;
 - ii. facility retirement assumptions; and
 - iii. sensitivity analyses related to fuel costs, environmental regulations, and other uncertainties or risks;
- (f) Data regarding the utility's current generation portfolio, including the age, licensing status, and remaining estimated life of operation for each facility in the portfolio;
- (g) Plans for meeting current and future capacity needs with the cost estimates for all proposed resource portfolios in the plan;
- (h) An analysis of the cost and reliability impacts of all reasonable options available to meet projected energy and capacity needs; and
- (i) A forecast of the utility's peak demand, details regarding the amount of peak demand reduction the utility expects to achieve, and the actions the utility proposes to take in order to achieve that peak demand reduction.

The IRP must represent the most reasonable and prudent means of meeting the utility's needs at the time of review requires the identification of a specific base plan, based on a portfolio modeled by the utility.

As the Commission indicated in Order No. 2020-832 rejecting the DESC 2020 IRP, the identification of a single resource plan as the most reasonable and prudent means of meeting the utility's energy and capacity needs at the time of review is an implied step in the development of an integrated resource plan. See Order No. 2020-832 at 18.⁴

B. Modified 2020 IRP – ORS Report

The ORS Report, submitted pursuant to S.C. Code Ann. Section 58-37-40(C)(3), identified eleven (11) Action Items that were required by the Commission for the Duke Companies to implement in their 2020 Modified IRPs. ORS identified the following list of Action Items in its Report⁵:

- 1) Select a preferred resource portfolio.
- 2) Prepare low and high load forecasts that account for long-term uncertainties.
- 3) Model all new solar resources as single-axis tracking.
- 4) Revise the natural gas price blends in the gas price forecasting methodology.
- 5) Revise high and low natural gas price forecasting scenarios.
- 6) Model solar PPAs as a selectable resource, and evaluate PPA price sensitivities.
- 7) Update models to account for the Investment Tax Credit extension on solar development.

⁴ Order 2021-447 at p. 10.

⁵ ORS Report at pp. 7-9.

- 8) Adjust the mix of single-axis tracking solar resources in future PURPA projects.
- 9) Use National Renewable Energy Laboratory (NREL) ATB Low figures for battery storage costs.
- 10) Assume an interim annual interconnection limit of 750 MW for new renewable generation.
- 11) Include Minimax regret analysis.

ORS describes all Action Items as being sufficient, except: Items 4) and 9) as being performed in the Modified 2020 IRP, but not in the selected plan; and Item 6) as conducting the solar PPAs as a selectable resource, but only for half the 750 MW annual limit.⁶

C. Modified 2020 IRP -- Other Parties' Comments

SCCCL, SACE, Upstate Forever, NRDC, Sierra Club, and CCEBA filed joint comments regarding the Modified 2020 IRPs.⁷ These parties asserted that the Duke Companies failed to remodel all of the portfolios with the requirements set forth by the Commission. As a result, these parties requested that the Commission take five actions:

- Require the Duke Companies to model all portfolios with the Commission-required natural gas and battery cost forecasts
- Reject the Duke Companies' selection of Portfolio C1 as its preferred portfolio as that portfolio uses natural gas and battery cost assumptions the Commission rejected as unreasonable
- Require the Duke Companies to select a preferred portfolio that is in full compliance with the

⁶ *Id.*

⁷ SCCCL, SACE, Upstate Forever, NRDC, Sierra Club, and CCEBA Joint Comments, filed October 26, 2021.

Commission's order

- Confirm that the Duke Companies changed its battery sizing methodology to conform with the costs from the NREL ATB report
- Require the Duke Companies to remove the arbitrary 50% limitation on least-cost third-party PPAs⁸

Vote Solar separately filed comments regarding the Modified 2020 IRP on October 26, 2021.⁹ Vote Solar asserts that the Duke Companies' "Modified Plans do not fully incorporate the Commission's ordered revisions,"¹⁰ and recommended the Commission "reject the Modified IRPs and implement further revisions in the Duke Companies' IRP Updates and 2022 IRPs" as follows:

- The Commission should clarify that Modified IRPs revise, rather than supplement, base IRPs, and direct the Duke Companies to fully implement its directives across all IRP portfolios.
- The Commission should clarify that the preferred portfolio should be the sole portfolio used across planning functions, and that the Duke Companies' Short Term Action Plans should match with implementation of the preferred portfolio.
- The Commission should direct the Duke Companies to allow all developed utility-scale solar to be third-party-owned, in order to deliver maximum benefits to ratepayers.
- The Commission should direct the Duke Companies to adopt a no-regrets approach to coal retirement, moving ahead with preparatory actions for retirement of units identified in Portfolio C1, while conducting the Commission-directed revision of

⁸ *Id.* at p. 4.

⁹ Vote Solar Comments to Modified IRP, filed October 26, 2021.

¹⁰ *Id.* at pp. 2-3.

its coal retirement analysis.

- The Commission should direct the Duke Companies to show, rather than tell, the Commission that its portfolios are consistent with net-zero carbon commitments through a carbon compliance plan, and include associated costs into IRP cost presentation.¹¹

D. The Duke Companies' Response to Intervenor Criticisms:

The Duke Companies filed responses to criticisms from all other parties in the Dockets on November 23, 2021. In this responsive filing, the Duke Companies assert, among other things: 1) DEC's and DEP's Modified IRPs comply with Act 62 and the Commission's Order;¹² 2) the Duke Companies appropriately applied the capital and fixed operating and maintenance costs from the ATB Low Forecast;¹³ and 3) the volume of \$38/MWh PPAs assumed in the Modified IRP is appropriate based on historic experience.¹⁴

Regarding the assertion that the Modified IRPs comply with Act 62 and the Commission's Order, the Duke Companies state:

In compliance with this Order and the IRP framework established through Act 62, the Companies developed nine SC Supplemental Portfolios incorporating the directives in the Commission's Order. In particular, Portfolios A1, B1, C1, D1, E1, and F1 incorporate the Commission's directives to (1) assume a 750 MW annual limitation on the interconnection of solar and storage resources; (2) account for the effect of the December 2020 Investment Tax Credit ("ITC") extension on solar development; (3) model future solar additions as single-axis tracking; and (4) include a \$38/MWh solar power purchase agreement ("PPA") as a selectable resource. Portfolios A2, B2, and C2 incorporate

¹¹ *Id.* at pp. 3-4.

¹² Companies' Responsive Filing dated November 23, 2021 at p. 6.

¹³ *Id.* at p. 19.

¹⁴ *Id.* at p. 20.

each of those modeling updates in addition to the Commission's directives to (1) revise natural gas price forecast methodology to reflect 18 months of market price before transitioning over an 18-month period to fundamental forecast; and (2) utilize alternate battery storage cost assumptions to reflect the NREL Annual Technology Baseline ("ATB") Low forecast. In taking this approach, the Companies addressed each of the modifications that the Commission directed the Companies incorporate into their respective Modified 2020 IRPs.¹⁵

Regarding the assertion that the Duke Companies appropriately applied the capital and fixed operating and maintenance costs from the ATB Low Forecast, the Duke Companies state:

Contrary to the Clean Energy Intervenor's assertion, the Companies fully complied with the Commission's order by directly, and appropriately, applying the NREL Low ATB capital and FOM costs in Portfolios A2, B2, and C2 of the Modified IRPs. Because the NREL ATB provided costs on a 2018 real dollar basis, an adjustment was required to escalate these costs to a 2020 real dollar basis in order to ensure all operating and capital costs used throughout the model were on a consistent year basis. After adjusting for the timing difference of the NREL costs, the Companies simply multiplied the NREL ATB low capital costs, provided in \$/kW, by the usable capacity of the battery to determine the capital cost of the battery modeled in Portfolios A2, B2, and C2.¹⁶

Regarding the assertion that the volume of \$38/MWh PPAs assumed in the Modified IRP is appropriate based on historic experience, the Duke Companies assert:

To determine the volume of solar energy that could potentially be available for procurement at this price, the Companies looked to their historical experience procuring solar at this price. Over the past four years, through the NC

¹⁵ *Id.* at p. 7.

¹⁶ *Id.* at p. 19.

Competitive Procurement of Renewable Energy (“CPRE”) Program, the Companies have procured approximately 600 MW of solar at approximately \$38/MWh (or lower) out of a total volume procured of 1,185 MW. Furthermore, the 600 MW of solar procured at or below \$38/MWh represents only 10% of the total 6,115 MW of solar projects that were bid into CPRE Tranches 1 and 2. Based on this information, it seems reasonable to assume for resource planning purposes that the Companies could procure 375 MW of solar at \$38/MWh each year over the next 15 years. In reality, however, it is quite uncertain what volume of solar PPAs will be available to the Companies for purchase over the next 15 years and at what price those PPAs may be offered. In addition to the Companies’ historical experience, other factors such as increasing land costs, supply chain and raw materials constraints exacerbated by the recent Covid pandemic, and increasing labor costs are putting upward pressure on solar costs which may reduce the availability of \$38/MWh PPAs even further. Based on the Companies’ historic experience, and evolving market forces, 375 MW each year is an optimistic, but reasonable, expectation.¹⁷

E. Discussion

The concerns raised by the intervening parties – ORS, SCCCL, SACE, Upstate Forever, NRDC, Sierra Club, CCEBA, and Vote Solar – are significant. However, many of the issues raised by the intervening parties concern the selection of the Duke Companies’ C1 Portfolio as the Duke Companies’ Preferred Plan. In the Commission Directive issued December 14, 2021, the Duke Companies were mandated to use Portfolio A2 as the selected base plan for the Modified 2020 IRPs. As a result, to the extent that the intervening parties asserted that Portfolio C1 is objectionable, those assertions have been addressed and disposed of by the Commission’s rejection of C1 as the Preferred Plan.

The December 14, 2021 Commission Directive also addresses and disposes of the

¹⁷ Companies’ Responsive Filing dated November 23, 2021 at p. 21.

concerns related to the modeling of portions of the 750 MW of additional solar PPA power.

The directive states that,

[T]he Duke Companies shall also include the following modeling or scenarios to be evaluated and examined as part of the next IRP filing, whether an update or comprehensive plan: with pricing and support per Order 2021-447, third-party solar PPAs as a selectable option for (a) fifty percent (50%) or half of the 750 MW renewable interconnection limit per year; and (b) one hundred percent (100%) of the 750 MW renewable interconnection limit per year.¹⁸

V. FINDINGS OF FACT

After review of the record, including the filings of all parties, the Commission makes the following findings of fact:

(1) The Duke Companies' Respective Modified 2020 IRPs were timely filed pursuant to S.C. Code Ann. Section 58-7-40.

(2) The ORS review and Report was timely filed pursuant to S.C. Code Ann. Section 58-7-40.

(3) The ORS Report identified three problem areas with the Modified 2020 IRPs where ORS recommends ongoing evaluation and examination.

(4) Of the three problem areas for ongoing evaluation and examination identified by ORS two of them 1) Revise the natural gas price blends in the gas price forecasting methodology and 2) Use NREL ATB Low figures for battery storage costs are objectionable because they are not included in the Duke Companies' selected Portfolio.

(5) The Commission, by issuing its Directive which mandates the use of

¹⁸ Commission Directive dated December 14, 2021.

Portfolio A2, has made moot the two issues identified by ORS above.

(6) ORS identified a potential deficiency with regard to the modeling of solar PPAs as a selectable resource and evaluations of price sensitivities. While the Duke Companies compellingly defend their modeling as being more appropriate given historical experience, the Commission Directive dated December 14, 2021, disposes of the issue prospectively.

(7) The Directive specified that certain modeling scenarios should be evaluated and examined as part of the next IRP filing, whether an update or comprehensive plan: with pricing support per Order 2021-447, third-party solar PPAs as a selectable option for (a) fifty percent (50%) or half of the 750 MW renewable interconnection limit per year; and (b) one hundred percent (100%) of the 750 MW renewable interconnection limit per year.

(8) The Directive further specified that, in addition to the points above, DEC and DEP shall comply with Order No. 2021-447 in further IRP filings.

VI. CONCLUSIONS OF LAW

After review of the record, including the filings of all parties, the Commission concludes that the Modified 2020 IRPs have been filed pursuant to and in satisfaction of the requirements of S.C. Code. Ann. Section 58-37-40 et. seq. and Order No. 2021-447. Under considerations of the statutory requirements, Order No. 2020-832, and Order No. 2021-447, the Commission concludes that the Duke Companies must select Portfolio A2 as the Preferred Plan.

VII. ORDERING PROVISIONS

(1) Duke Energy Progress, LLC and Duke Energy Carolinas, LLC shall use

Portfolio A2 as the selected base plan for their respective Modified 2020 IRPs.

(2) Duke Energy Progress, LLC and Duke Energy Carolinas, LLC shall include the following modeling or scenarios to be evaluated and examined as part of the next IRP filing, whether an update or comprehensive plan: pricing and support per Order No. 2021-447, third-party solar PPAs as a selectable option for (a) fifty percent (50%) or half of the 750 MW renewable interconnection limit per year; and (b) one hundred percent (100%) of the 750 MW renewable interconnection limit per year.

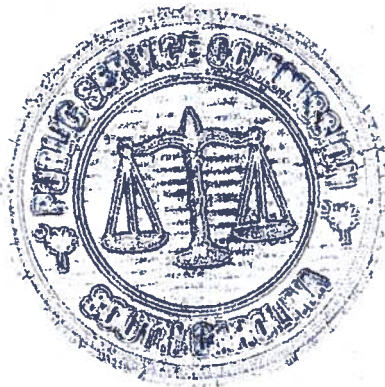
(3) Duke Energy Progress, LLC and Duke Energy Carolinas, LLC shall comply with Order No. 2021-447 in further IRP filings.

(4) The Duke Companies' 2020 Modified IRPs are approved as described herein.

(5) The Commission's findings, conclusions, and Order shall not be determinative of the reasonableness or prudence of the acquisition, replacement, or construction and any new resources or the making of any expenditure by DEC or DEP.

(6) This Order shall remain in full force and effect until further Order of the Commission.

BY ORDER OF THE COMMISSION:



Justin T. Williams, Chairman
Public Service Commission of
South Carolina